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10/525,153	10/11/2005	Joachim Charzinski	2002P13482WOUS	5278

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Siemens Corporation
Intellectual Property Department
170 Wood Avenue South
Iselin, NJ 08830

EXAMINER

NILANONT, YOUAPORN

ART UNIT	PAPER NUMBER
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2446

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/525,153	Applicant(s) CHARZINSKI ET AL.	
	Examiner YOUAPORN NILANONT	Art Unit 2446	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 October 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 18-33 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 18-33 is/are rejected.
- 7) ☒ Claim(s) 18, 25-26, 28, 33 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 February 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>2/18/2005</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. Figures 1 and 2 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Furthermore, descriptive legends are required for various elements in figures 1-4 for a better understanding of the invention. See 37 CFR 1.84(o).
2. Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

3. Claims 18, 25-26, 28, and 33 are objected to because of the following informalities:

the limitations "the access interface" and "the egress interface" in claim 18 are recommended to be changed to --an access interface-- and --an egress interface-- since it is their first occurrence;

claims 18 and 33 recite "on item of data about the egress" which appears to be a misspelling and should be --one item--;

claims 25 and 28 recites "the ingress interface" which was addressed as "the access interface" in other claims. For purposes of examination, "the ingress interface" has been construed to have been used interchangeably with "the access interface";

claim 26 recites acronym "MPLS" which should be accompanied by its complete name to prevent any ambiguity that may arise.

4. Appropriate correction is required.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 18-22 and 25-33 are rejected under 35 U.S.C. 102(b) as being anticipated by Rosen et al. (Internet draft "A proposed Architecture for MPLS").
7. Regarding claim 18, the Rosen reference teaches a method for routing of data packets (see Rosen, page 4, 3rd paragraph-4th paragraph) for avoiding circulation of the data packets (see Rosen, page 20, 1st paragraph "list is used to prevent the formation of switched path loops"), in a packet-switched network, made up of routers (see Rosen, page 4, 4th paragraph "subsequent hops"), which uses traffic distribution, the method comprising:

forwarding a data packet by an internal router of the packet-switched network (see Rosen, page 4, 4th paragraph “At subsequent hops...forwarded to its next hop”); and

providing alternative routes for the forwarding of the data packet (see Rosen, page 43, section 3.4 “multiple routes for a particular Stream”),

wherein the forwarding of the data packet is carried out by using at least one item of data about the access interface at which the data packet entered the packet-switched network (see Rosen, page 14, 2nd paragraph and section 2.11, it is understood that the label at the top of stack has indicates that the packet is coming from an ingress node) and on item of data about the egress interface, at which the data packet is to leave the packet-switched network (see Rosen, page 28, 1st paragraph, it is understood that the label controls forwarding path).

8. Regarding claim 19, the Rosen reference teaches the method of claim 18, further comprising:

providing the data packet at the access interface with identification data used by the internal router to identify the access interface (see Rosen, page 14, section 2.11, and below the paragraph started with “In other words” on page 15 “level m label”) and the egress interface (see Rosen, below the paragraph started with “In other words” on page 15 “level m-k label”).

9. Regarding claim 20, the Rosen reference teaches the method of claim 19, wherein the identification data include an identifier or a network address for the access

Art Unit: 2446

interface and the egress interface (see Rosen, below the paragraph started with “In other words” on page 15, “level m label” and “level m-k label”).

10. Regarding claim 21, the Rosen reference teaches the method of claim 20,
wherein at the access interface the data packet is supplied with a data field (see Rosen, section 2.3 on page 11 “encapsulation”, and last paragraph on page 33 “generic MPLS encapsulation”), and

wherein the internal router takes from the data field the data about the access interface at which the packet entered the packet-switched network and the data about its egress interface (see Rosen, page 33 “label stack”, it is understood, as previously cited, that the label stack contains information of packet's path which includes ingress and egress nodes' information).

11. Regarding claim 22, the Rosen reference teaches the method of claim 21,
wherein the data packet is supplied with a data field (see Rosen, section 2.3 on page 11 “encapsulation”, and last paragraph on page 33 “generic MPLS encapsulation”),

wherein the data field is added onto the data packet as a header or a trailer (see Rosen, page 33 section 2.21.1 “shim”), and

wherein the data field includes an identifier for the access interface and the egress interface (see Rosen, page 33 “label stack”, it is understood, as previously cited, that the label stack contains information of packet's path which includes ingress and egress nodes' information).

12. Regarding claim 25, the Rosen reference teaches the method of claim 22,

wherein at the ingress interface, the data packet is supplied with at least one data field (see Rosen, bottom half of page 14, ““LSP Ingress”, pushes a label”), and

wherein this data field is removed at the egress interface (see Rosen, page 39, last paragraph “the LSP Egress will need to look up the label, pop the label stack”).

13. Regarding claim 26, the Rosen reference teaches the method of claim 21, wherein at least one data field is provided by an MPLS label (see Rosen, page 7 “MPLS label” and previously cited rejection regarding “shim”).

14. Regarding claim 27, the Rosen reference teaches the method of claim 20, wherein the identification data is written into a field provided as part of the format for the data packet (see Rosen, page 11, section 2.3 “placing the label in an available location in...headers”).

15. Regarding claim 28, the Rosen reference teaches the method of claim 18, wherein the egress interface is referenced by an identifier (see Rosen, mid-page of page 15 “level m-k label”),

wherein the identifier of the egress interface is determined by reference to a network address in the network, to which the data packet is to be forwarded after it has traversed the packet-switched network (see Rosen, page 45 number 3 “b”), and

wherein the determination of the identifier of the egress interface is carried out at the ingress interface by reference to the network address, using a table (see Rosen, page 45 number 3 “Suppose that...”).

16. Regarding claim 29, the Rosen reference teaches the method of claim 18, further comprising:

supplying the data packet at the access interface with an identification data used by the internal router for identifying the access interface (see Rosen, page 4, 3rd paragraph “as the packet enters the network” and “label”),

wherein the identification data include an identifier or a network address for the access interface (see Rosen, page 14 section 2.11, it is understood that the label inserted by ingress node is used as an incoming label index into a table); and

determining the data about the egress interface by the internal router by using address data extracted from the data packet (see Rosen, page 14, 3rd paragraph “In order to forward an unlabeled packet...”).

17. Regarding claim 30, the Rosen reference teaches the method of claim 18, wherein the internal router determines the data about the access interface and the data about the egress interface by using address data extracted from the data packet (see Rosen, page 11 section 2.3 “placing the label in an available location...”, therefore it is understood that in order to perform the method as claimed in claim 18, the label which indicates data about ingress and egress nodes must be extracted from the packet).

Art Unit: 2446

18. Regarding claim 31, the Rosen reference teaches the method of claim 18, wherein the forwarding of the data packet is effected with the help of a routing table, the routing table assigns the data about the access-interface at which the data packet entered the packet-switched network and the data about the egress interface to a network address for the next hop (see Rosen, page 36 section 3.1.1 and page 37 section 3.1.2.2).

19. Regarding claim 32, the Rosen reference teaches the method of claim 18, further comprising:

supplying the data packet at the access interface with a data field for identifying the flow (see Rosen, page 11 section 2.3 “label...by means of encapsulation” and section 3.4 “support multiple routes...”); and

performing the forwarding of the data packet by the internal router according to the data field (see Rosen, page 14 section 2.10 “forward a labeled packet...examines the label”) .

20. Regarding claim 33, the Rosen reference teaches an internal router (see Rosen, section 3.1.2.2. “LSR” and page 7 “label switching router”) in a packet-switched network for performing

a method for routing of data packets (see Rosen, page 4, 3rd paragraph-4th paragraph) for avoiding circulation of the data packets (see Rosen, page 20, 1st paragraph “list is used to prevent the formation of switched path loops”), in a packet-switched network, made up of routers (see Rosen, page 4, 4th paragraph “subsequent hops”), which uses traffic distribution, the method comprising:

forwarding a data packet by an internal router of the packet-switched network (see Rosen, page 4, 4th paragraph “At subsequent hops...forwarded to its next hop”); and

providing alternative routes for the forwarding of the data packet (see Rosen, page 43, section 3.4 “multiple routes for a particular Stream”),

wherein the forwarding of the data packet is carried out by using at least one item of data about the access interface at which the data packet entered the packet-switched network (see Rosen, page 14, 2nd paragraph and section 2.11, it is understood that the label at the top of stack has indicates that the packet is coming from an ingress node) and on item of data about the egress interface, at which the data packet is to leave the packet-switched network (see Rosen, page 28, 1st paragraph, it is understood that the label controls forwarding path), wherein the internal router comprises a routing table which assigns the data about the access interface at which the data packet entered the packet-switched network and the data about the egress interface to a network address for the next hop (see Rosen, page 36 section 3.1.1 and page 37 section 3.1.2.2).

Claim Rejections - 35 USC § 103

21. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 2446

22. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rosen et al. (Internet Draft "A Proposed Architecture for MPLS") in view of Delaney et al. (U.S. Patent No. 6,937,574).

23. Regarding claim 23, the Rosen reference teaches the method of claim 21 in which a packet may have multiple labels contained in what is called a label stack (see Rosen, page 12, section 2.6 "last-in, first-out stack"). The Rosen reference does not teach that its label has one field for ingress node and one field for egress node. Rather, the Rosen's router uses one label to determine other nodes.

However, the Delaney reference teaches steps of assigning, to the packet, egress address and ingress address, which can be encapsulated in the packet (see Delaney, column 3 lines 46-50 and 54-55). Therefore the Delaney reference teaches that the data packet is supplied with two data fields (see Delaney, column 3 lines 46-47 and 54-55, "...may also be encapsulated..."), wherein each of the data fields is added to the data packet as a header or a trailer (see Delaney, column 3 lines 46-47 and 54-55, "encapsulated", it is understood in the art that encapsulation wraps a packet with information regarding the packet according to each protocol level), wherein one of the data fields includes an identifier for the access interface (see Delaney, column 3 lines 54-55, "ingress address") and the other data field includes an identifier for the egress interface (see Delaney, column 3 lines 46-47, "egress address").

It would have been obvious to the person having ordinary skill in the art, at the time the invention was made, to have included information about ingress node and egress node separately in the packet's header as taught in Delaney instead of Rosen's

Art Unit: 2446

teaching of one label as an index into a table to determine the ingress and egress data in order to eliminate the swap, push, or pop operations for the routers which are incompatible to so such operations that must be done in Rosen's routers.

24. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rosen et al. (Internet Draft "A Proposed Architecture for MPLS") in view of Cisco ("Cisco AVVID Network Infrastructure Enterprise Quality of Service Design").

25. Regarding claim 24, the Rosen reference teaches the method of claim 22, but does not explicitly show that there is a bit sequence is appended to or prefixed to at least one data field, identifying the data field as such. The Cisco reference, on the other hand, shows the precise structure of a data packet in MPLS enabled system. The Cisco reference shows how the stack of labels, which can be used to identify nodes in the MPLS network, is placed in between the Frame Header and the IP Header and how the label is indicated as a label instead of an IP header (see Cisco, bottom of page 6-3, "the bottom-of-stack bit indicates whether the next header is another label or...").

It would have been obvious to the person having ordinary skill in the art, at the time the invention was made, to have used the specific description of the Cisco reference to specify how the LSR routers in Rosen reference are able to indicate that the header is a MPLS label or an IP header.

Conclusion

26. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- a. Rosen et al. (RFC 3031) is the updated version of the Rosen et al. (Internet Draft) reference and teaches the use of multiprotocol label switching (MPLS) similar to the prior art from Rosen et al. (Internet Draft) used in rejections above.
- b. Hayashi et al. teaches the method of using MPLS with traffic engineering (TE) method in order to choose different paths for packets to travel according to availability of network resources.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to YOUPAPORN NILANONT whose telephone number is (571) 270-5655. The examiner can normally be reached on Monday through Thursday and alternate Friday at 7:30 AM - 5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jeffrey C. Pwu can be reached on (571) 272-6798. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2446

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Y. N./

Youpaporn Nilanont
Examiner, Art Unit 2446
11/5/2008

/Jeffrey Pwu/

Supervisory Patent Examiner, Art Unit 2446